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EDUCATION

Princeton University, Princeton, NJ

Ph.D., Civil and Environmental Engineering, Environmental Engineering and Water Resources Program (June 2012)

- Dissertation: Impact of mineral precipitation on the pore network structure of sediment
- Advisor: Dr. Catherine A. Peters

M.A., Civil and Environmental Engineering (September 2009)

Michigan Technological University, Houghton, MI

B.S.E. (Magna Cum Laude), Environmental Engineering (April 2007)

RESEARCH EXPERIENCE

Lawrence Berkeley National Laboratory, Berkeley, CA
Postdoctoral Fellow, September 2012 - present
Advisors: Dr. Ian Bourg and Dr. Carl Steefel
Reactivity of chlorite in fracture leakage pathways and contribution to fracture sealing or enhancement, image analysis to determine improved reactive surface area estimates for reactive transport models

Princeton University, Princeton, NJ
Graduate Research Assistant, September 2007-August 2012
SEM imaging and pore network modeling of reactive column experiments to examine precipitation and dissolution reactions in porous media

Michigan Technological University, Houghton, MI

Waste-management, Education and Research Consortium (WERC)
Environmental Design Contest, 2006
Cleaning of a Contaminated Water Distribution System
Team received 2nd place

Washington University in St. Louis, St. Louis, MO

National Science Foundation Research Experience for Undergraduates
Department of Energy, Environmental, and Chemical Engineering, 2005
Center for Air Pollution Impact and Trend Analysis
Detecting and monitoring forest fires using remote sensing and GIS to examine their effect on air quality in the US

PEER REVIEWED PUBLICATIONS

Beckingham, L.E., Peters, C.A., Um, W., Jones, K., and W.B. Lindquist. 2D and 3D imaging resolution trade-offs in quantifying pore throats for prediction of permeability. *Adv. Water. Res.* Submitted.

Crandell, L.E., Peters, C.A., Um, W., Jones, K., and W.B. Lindquist. Changes in the Pore Network Structure of Hanford Sediment After Reaction with Caustic Tank Wastes. *J. Contam. Hydrol*. **2012**, 131, 89-99.

Jones, K.W., Tappero, R., Wang, J., Chen, Y.C., Lindquist, W.B., **Crandell, L.E.,** Peters, C.A., Um, W., Newman, L., Sabo-Attwood, T. and C. Moyer. Tomographic Investigations Relevant to the Rhizosphere. Invited paper to appear in S.H. Anderson and J.W. Hopmans (Eds.), Tomography and Imaging of Soil-Water-Root Processes, 2nd edition, Soil Science Society of America, Madison, WI. **2011**.

Crandell, L. E., Ellis, B. R., Peters, C. A. Dissolution Potential of SO_2 Co-Injected with CO_2 in Geologic Sequestration. *Environ. Sci. Technol*. **2010**, 44, 349-355.

Ellis, B. R., **Crandell, L. E.,** Peters, C. A. Limitations for Brine Acidification due to SO2 Co-Injection in Geologic Carbon Sequestration. *Int. J. Greenhouse Gas Control.* **2010**, 4, 575-582.

PUBLICATIONS IN PROGRESS

Beckingham, L.E., Peters, C.A., Um, W., Jones, K., and W.B. Lindquist. Intragranular Porosity in Hanford Sediment After Reaction with Caustic Tank Wastes: Quantification and Implications for Reactive Transport.

TEACHING EXPERIENCE

Princeton University, Princeton, NJ

Group Leader, 2011-2012
Civil and Environmental Engineering Senior Thesis Writing Workshop
Planning and leading 18 senior thesis students in a year-long sequence of workshops focused on research, writing, and presentation skills.

Teaching Assistant, Spring 2012
Course: Engineering Projects in Community Service (EPICS)
Coordinating, leading work sessions, and providing administrative assistance to a team of undergraduate students as they continue designing and building a wind turbine prototype that is stored in, and deployed from, a shipping container.

McGraw Teaching Transcript Program, Fall 2009 – Spring 2012
Attended assistant in instruction orientation, participated in a series of seminar programs focused on enhancing teaching skills, performed a course lecture with a class visit and feedback session with McGraw Center consultant, and created an original course syllabus and teaching philosophy.

Teaching Assistant, Spring 2011
Course: Introduction to Environmental Engineering
Planned and presented one lecture, met with students to discuss course material and questions, graded homework and exams, and attended course lectures to observe teaching methods.

Teaching Assistant, Fall 2009
Course: Introduction to Water Pollution Technology
Gave three course lectures and one review session, met individually with students to answer course questions and assisted in grading final course project.

Michigan Technological University, Houghton, MI

Mathematics Learning Center Coach, 2005 - 2007
Planned and led weekly and bi-weekly individual and group appointments

University of Michigan, Ann Arbor, MI

Academic Mentoring Program Mentor, 2003 - 2004
Prepared and held weekly individual meetings and sessions

PRESENTATIONS

Beckingham, L.E., Peters, C.A., Um, W., Jones, K., and W.B. Lindquist. 2D imaging in a 3D world: Observing sub-grain scale variations and secondary mineral precipitates in reacted pore networks. Poster session presented at: American Geophysical Union Fall Meeting; San Francisco, CA, December 3-7, 2012.

Crandell, L.E., Peters, C.A., Um, W., Jones, K., and W.B. Lindquist. Intragranular Porosity in Hanford Sediment: Quantification and Implications for Radionuclide Trapping. Presented at: American Chemical Society Spring Meeting; San Diego, CA, March 25-29, 2012.

Crandell, L.E. The 2D Versus 3D Imaging Trade-off: The Impact of Over- or Under- Estimating Small Throats for Simulating Permeability in Porous Media. Presented at: Lawrence Berkeley National Laboratory; Berkeley, CA, March 16, 2012.

Crandell, L.E., Peters, C.A., Um, W., Jones, K., and W.B. Lindquist. Intragranular Porosity in Hanford Sand Grains After Reaction with Caustic Tank Wastes: Quantification and Implications for Reactive Transport. Poster session presented at: American Geophysical Union Fall Meeting; San Francisco, CA, December 5-9, 2011.

Crandell, L.E., Peters, C.A., Um, W., Jones, K., and W.B. Lindquist. The 2D Versus 3D Imaging Trade-off: The Impact of Over- or Under- Estimating Small Throats for Simulating Permeability in Porous Media. Presented at: American Geophysical Union Fall Meeting; San Francisco, CA, December 5-9, 2011.

Crandell, L.E., Peters, C.A., Um, W., Jones, K., and W.B. Lindquist. Changes in the Pore Network Structure of Hanford Sand After Reaction with Caustic Tank Wastes. Poster session presented at: Association of Environmental Engineering and Science Professors Education and Research Conference; Tampa, FL, July 10-12, 2011.

Crandell, L.E., Peters, C.A., Um, W. and W.B. Lindquist. Sub-grain Scale Mineralogy of Hanford Sand After Reaction with Caustic Tank Wastes. Poster session presented at: American Geophysical Union Fall Meeting; San Francisco, CA, December 13-17, 2010.

Ellis, B.R., Crandell, L.E. and C.A. Peters. Co-injection of SO_2 with CO_2 in Geological Sequestration: Potential for Acidification of Formation Brines. Poster session presented at: American Geophysical Union Fall Meeting; San Francisco, CA, December 15-19, 2008.

Crandell, L. E., Ellis, B. R., and C.A. Peters. Solubility and Diffusivity of SO_2 for Co-injection with CO_2 in Geological Sequestration. Poster session presented at: American Geophysical Union Fall Meeting; San Francisco, CA, December 15-19, 2008.

Crandell, L.E., Ellis, B.R., Cheung, J. and C.A. Peters. Injection of Carbon Dioxide and Co-contaminant Gases: Are Separation Costs Justifiable? Presented at: the Seventh Annual Conference on Carbon Capture & Sequestration; Pittsburgh, PA, May 5–8, 2008.

HONORS

American Chemical Society Division of Environmental Chemistry Certificate of Merit Award for presentation given at American Chemical Society Spring Meeting; San Diego, CA, March 25-29, 2012.
Association of Environmental Engineering and Science Professors 2011 Student Poster Award, 2011 AEESP Education and Research Conference, $200 cash prize, eleven total awards
Princeton University Graduate Fellowship, 2007
Full funding for first year of Ph.D. (~$63,000)
Michigan Technological University Civil and Environmental Engineering Academic Achievement Award, 2007
Given annually to one female and one male graduating senior in each academic major.
Brother B. Austin Barry National Chi Epsilon Scholarship, 2006
$2500, one of seven annual awards
Marian Sarah Parker Scholar (given to outstanding women in engineering at University of Michigan), 2004
University of Michigan Regents Merit Scholarship, 2002
Michigan Competitive Scholarship, 2002
Michigan Merit Award, 2002

TEACHING INTERESTS

Environmental Engineering Fundamentals, Environmental Engineering Laboratory, Aqueous Geochemistry, Water Chemistry, Numerical Modeling, Reactive Transport Modeling, Groundwater Hydrology, Chemical Processes

UNIVERSITY SERVICE

Association of Princeton Graduate Alumni, Reunions Crew Member, 2009-2011 and Crew Co-Manager, 2012
Princeton University Graduate Engineering Ambassador, 2007-2009
Princeton Graduate Women in Science and Engineering, WISE conference planning committee, 2007-2008

PROFESSIONAL MEMBERSHIPS

American Geophysical Union
American Chemical Society
Tau Beta Pi, secretary, Michigan Technological University, 2006
Chi Epsilon, president, Michigan Technological University, 2006-2007
Phi Kappa Phi

COMPUTER SKILLS

Environments: Windows, Linux, Macintosh
Applications: MATLAB, PhotoShop, AutoCAD, Microsoft Office, ArcGIS, Blackboard, SewerCAD, Maple, EPANet
Languages: MATLAB, C++, FORTRAN, Visual Basic

REFERENCES

1. Dr. Catherine A. Peters
   Professor
   Civil and Environmental Engineering Department
   Princeton University
   (609) 258-5645
   cap@princeton.edu

2. Dr. W. Brent Lindquist
   Professor and Deputy Provost
   Department of Applied Mathematics and Statistics
   Stony Book University
   (631) 632-8361
   blindquist@notes.cc.sunysb.edu

3. Dr. Satish Myneni
   Associate Professor
   Geosciences Department
   Princeton University
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4. Dr. James R. Mihelcic
   Professor and State of Florida 21st Century World Class Scholar
   Civil and Environmental Engineering Department
   University of South Florida
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5. Dr. Wooyong Um
   Pacific Northwest National Laboratory
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   Division of Advanced Nuclear Engineering
   Pohang University of Science and Technology, South Korea
   Wooyong.um@pnnl.gov